

Serial No.: 09/648,019  
Group Art Unit: 2633  
Examiner: David C. Payne

Amendment to the Claims

1. (Currently Amended) In a fiber optic communications network having a transmitter and a receiver connected by an optical transmission line, the receiver having multiple output channels for providing signals to terminal devices, each output channel including a demodulator to detect and recover a received valid signal, and a network including at least one optical amplifier having a shutdown input, a system for detecting a disconnect in the optical transmission line comprising:

means connected to each demodulator for sensing the presence of a received valid signal; ~~and~~

means for detecting whether a predetermined number of received valid signals are present at a predetermined number of the multiple demodulators; and

means for activating the shutdown input of the optical amplifier if the predetermined number of received valid signals is not detected.

2. (Cancelled)

3. (Original) The system of Claim 1 wherein said means for determining whether a predetermined number of received valid signals are present includes means for formulating a ratio of the number of received valid signals are present to the number of operational demodulators.

4. (Currently Amended) A fiber optic WDM communications network comprising:  
multiple wavelength transmitters and multiple wavelength receivers connected by a WDM optical transmission system;

said multiple wavelength receivers including multiple channel receivers for providing signals to terminal devices, each of said channel receivers including a demodulator to detect and recover a valid received signal, and for generating an output signal;

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an optical amplifier coupled to said optical transmission line, said optical amplifier having a shutdown input;  
means connected to said demodulators for sensing the absence of said valid signals;  
means for determining whether a predetermined number of said valid signals are present, and for generating a shutdown signal when said predetermined number is insufficient, wherein said means for determining includes a counter for counting the number of said demodulators in operation, and wherein said number of valid signals is less than the predetermined majority number of operating demodulators; and  
means for applying said shutdown signal to said optical amplifier shutdown input to thereby terminate optical amplifier operation.

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5. (Cancelled)

6. (Currently Amended) ~~The fiber optic communication network of Claim 4 wherein said determining means includes:~~ A fiber optic WDM communications network comprising:  
multiple wavelength transmitters and multiple wavelength receivers connected by a WDM optical transmission system;  
said multiple wave length receivers including multiple channel receivers for providing signals to terminal devices, each of said channel receivers including a demodulator to detect and recover a valid received signal, and for generating an output signal;  
an optical amplifier coupled to said optical transmission line, said optical amplifier having a shutdown input;  
means connected to said demodulators for sensing the absence of said valid signals;  
means for determining whether a predetermined number of said valid signals are present, and for generating a shutdown signal when said predetermined number is insufficient, wherein said determining means includes means for determining whether a predetermined majority number of said demodulators have detected a valid signal and for generating a ratio of the number of valid signals present to the number of operational demodulators; and

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means for applying said shutdown signal to said optical amplifier shutdown input to thereby terminate optical amplifier operation.

7. (Currently Amended) A method for detecting a disconnect in an optical transmission line of a fiber optic communications network having a transmitter and a receiver connected by the optical transmission line, the receiver having multiple output channels for providing signals to terminal devices, each output channel including a demodulator to detect and recover a received signal, and a network including at least one optical amplifier having a shutdown input, the method comprising:

sensing at the demodulator the presence of a valid signal; and

detecting whether a predetermined number of valid signals are present at the

demodulators; and

activating the shutdown input of the optical amplifier if the predetermined number of valid signals is not detected.

8. (Cancelled)

9. (Original) The method of Claim 7 wherein determining whether a predetermined number of valid signals are present includes:

formulating a ratio of the number of valid signals present to the number of operational demodulators.

10. (New) An optical node for transmitting and receiving a wavelength-division multiplex (WDM) signal and having at least one amplifier associated with the optical node, comprising:

a demultiplexer for separating multiple wavelengths from the WDM signal and outputting the multiple wavelengths;

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a plurality of receive wavelength adapters that each receive one of the multiple wavelengths outputted from the demultiplexer, wherein each of the plurality of receive wavelength adapters monitors the quality of their inputted wavelength and outputs a loss of signal in response to loss of the inputted wavelength; and

a shutdown-restart control that receives loss of signal outputs from each of the plurality of receive wavelength adapters and in response to a predetermined number of loss of signal outputs, activating a mechanism to shut down at least one amplifier associated with the optical node.

11. (New) The optical node of claim 10, wherein each of the plurality of receive wavelength adapters output a loss of signal if the received power of the inputted wavelength is lost, the received power is random noise, the received power is a signal that is in wrong data format, the received power is a signal that is at a wrong data rate, the inputted wavelength has a wrong identification code or the inputted wavelength has a wrong signal trace code.

12. (New) The optical node of claim 10, wherein the at least one associated optical amplifier amplifies the received WDM signal.

13. (New) The optical node of claim 10, wherein the at least one associated optical amplifier amplifies a WDM signal transmitted by the optical node.

14. (New) The optical node of claim 13, wherein the at least one associated optical amplifier is located at the optical node.

15. (New) The optical node of claim 13, wherein the at least one associated optical amplifier is located remotely from the optical node.